

## Claims

1) A data model for supply chain planning, said data model comprising at least one order, said at least one order further comprising:

a) at least one activity, wherein:

each of said at least one activity representing a working step that is indivisible from a production planning perspective;

each of said at least one activity being linked to a reference to all immediately subsequent activities;

each of said at least one activity being linked to a reference to all immediately preceding activities;

b) one or more input interface nodes, wherein:

each input interface node represents a material consumed by said at least one order, each input interface node being linked to all activities that consume said material; and

c) one or more output interface nodes, wherein:

each output interface node represents a material created by said at least one order, each output interface node being linked to all activities that create said material;

wherein each output interface node of a first order is linked to a reference to a respective input interface node of each subsequent order scheduled to consume the material

associated with said output interface node of said first order.

2) The data model of claim 1, wherein said reference to all immediately preceding activities and said reference to all immediately subsequent activities each have at least two attributes, said at least two attributes including the minimum and maximum time interval between activities and the type of temporal constraint.

3) The data model of claim 1, wherein each of said at least one activity has at least four attributes, said at least four attributes including a start and finish time, a reference to the resource on which the activity is currently scheduled, and a reference to a list of one or more alternative resources.

4) The data model of claim 1, wherein each input interface node contains information regarding a required material, required quantity, the time at which said required material is required, and any shortage of said required material, said shortage defined as the difference between the required quantity and the quantity of said required material that is delivered by other orders or stock, and wherein each output interface node contains information regarding a created material, created quantity, the time at which said created material is created, and any surplus of said created

material, said surplus defined as the difference between the created quantity and the quantity of said created material that is not yet delivered to other orders.

5) The data model of claim 1, wherein each of said at least one order has a pre-assigned order number, said data model further comprising a database table having an entry for each pre-assigned order number matched to its object identity, which is a reference to the respective order.

6) The data model of claim 5, wherein a plurality of said activities within said at least one order constitutes an operation, and wherein each operation has a pre-assigned operation number, said data model further comprising a database table having an entry for each object identity and pre-assigned operation number matched to the earliest activity of the respective operation.

7) The data model of claim 1, wherein each material has a pre-assigned material number, said data model further comprising a database table having an entry for each pre-assigned material number matched to a reference to at least one input interface node at which the respective material is consumed, and an entry for each pre-assigned material number matched to a reference to at least one output interface node at which the respective material is created.

8) The data model of claim 7, wherein said database table further comprises identifying information for each material including at least one of plant, storage location, and batch.

9) The data model of claim 1, wherein each resource has a pre-assigned resource number, said data model further comprising a database table having an entry for each pre-assigned resource number matched to a chronological sequence of activities scheduled on the respective resource.

10) A data model for supply chain planning, said data model comprising:

at least one order, said at least one order having at least one of:

a) one or more input interface nodes;

wherein each input interface node represents a material consumed by said order; and

b) one or more output interface nodes;

wherein each output interface node represents a material created by said order;

wherein each output interface node of a first order being linked to a reference to the respective input interface node of each subsequent order scheduled to consume the material

associated with said output interface node of said first order.

11) The data model of claim 10, wherein each input interface node contains information regarding a required material, required quantity, the time at which said required material is required, and any shortage of said required material, said shortage defined as the difference between the required quantity and the quantity of said required material that is delivered by other orders or stock, and wherein each output interface node contains information regarding a created material, created quantity, the time at which said created material is created, and any surplus of said created material, said surplus defined as the difference between the created quantity and the quantity of said created material that is not yet delivered to other orders.

12) The data model of claim 11, wherein each of said at least one order has a pre-assigned order number, said data model further comprising a database table having an entry for each pre-assigned order number matched to its object identity, which is a reference to the respective order.

13) The data model of claim 10, wherein each material has a pre-assigned material number, said data model further comprising a database table having an entry for each pre-assigned material number matched to a reference to at least

one input interface node at which the respective material is consumed, and an entry for each pre-assigned material number matched to a reference to at least one output interface node at which the respective material is created.

14) The data model of claim 13, wherein said database table further comprises identifying information for each material including at least one of plant, storage location, and batch.

15) A data model for supply chain planning, said data model comprising:

at least one order, each of said at least one order representing at least one activity, wherein:

each of said at least one activity representing a working step that is indivisible from a production planning perspective;

each of said at least one activity being linked to a reference to all immediately subsequent activities; and

each of said at least one activity being linked to a reference to all immediately preceding activities.

16) The data model of claim 15, wherein said reference to all immediately preceding activities and said reference to all immediately subsequent activities each have at least two attributes, said at least two attributes including the

minimum and maximum time interval between activities and the type of temporal constraint.

17) The data model of claim 15, wherein each of said activities has at least four attributes, said at least four attributes including a start and finish time, a reference to the resource on which the activity is currently scheduled, and a reference to a list of one or more alternative resources.

18) The data model of claim 15, wherein each of said at least one order has a pre-assigned order number, said data model further comprising a database table having an entry for each pre-assigned order number matched to its object identity, which is a reference to the respective order.

19) The data model of claim 18, wherein a plurality of said activities within said at least one order constitutes an operation, and wherein each operation has a pre-assigned operation number, said data model further comprising a database table having an entry for each object identity and pre-assigned operation number matched to the earliest activity of the respective operation.

20) The data model of claim 15, wherein each resource has a pre-assigned resource number, said data model further comprising a database table having an entry for each pre-

assigned resource number matched to a chronological sequence  
of activities scheduled on the respective resource.